USEPA draft Memorandum August 29, 2014

Subject: This memorandum present images of forest harvest areas in the Triangle Lake region of the central coast range of Oregon where herbicides were applied using aerial broadcast application methods with helicopters.

Images in this document illustrate that there are many designated non-fish bearing streams located within these herbicide application zones. It is important to note that these non-fish bearing streams drain into fish bearing streams.

In addition, it appears that it is expected that the retained riparian buffer surrounding fish-bearing streams will protect against herbicide drift into the fish bearing stream –

> "This stream [a tributary to the Siuslaw River] is classed as a small, "F" or fish-bearing stream, in this area. Seneca plans to directly apply herbicides adjacent to the indicated watercourse but no closer than 60 feet. This will allow the buffer to protect the stream from any potential drift or error of application and maintain shade on watercourse."
>
> [Example from Notification # 2009-781-50075]

Included in this document are images of the retained riparian buffers following harvest activities. These images show that often few trees are retained along many of these fish-bearing streams due to various reasons (i.e., post-harvest blow down, direct harvest, disease, low density pre-harvest conditions, cumulative effects of multiple harvest activities, etc.). Accordingly, it is problematic to expect these sparse buffers to provide much protection against potential drift of herbicide into fish-bearing streams.

Figure 1 illustrates the aerial broadcast application zone of herbicides associated with notification number 2009-781-50075. This application zone is along a tributary of the Siuslaw River. The applicants proposed to apply herbicide 60 feet away from the fish-bearing stream using aerial broadcasting methods. The brand name of the herbicide applied as part of this effort was Triclopyr 4 Ester_LV6 (2 4D)_Terrain. **Figures 2 and 3** present close-up images of the near-stream riparian buffer along the small fish bearing stream within this herbicide application effort.

Figure 4 illustrates the aerial broadcast application zone of herbicides associated with the "Fish Creek 28 NE" unit (i.e., Unit 8) of the notification numbered 2011-781-00151. This application zone is along a tributary of the Middle Fork Fish Creek. The applicant applied herbicide using aerial broadcasting methods. The herbicides applied were Hexazinone, Atrazine, and 2,4-D. **Figures 5 and 6** present close-up images of the near-stream riparian buffer along the small buffered stream within this herbicide application effort: Because this stream has riparian buffers, it appears that this stream reach within this image may have been designated as a fish-bearing stream.

Figure 7 illustrates the aerial broadcast application zone of herbicides associated with the "Fisk Bits" unit (i.e., Unit 7) of the notification numbered 2011-781-00151. This application zone is along a tributary of the South Fork Hayes Creek. The applicant applied herbicide using aerial broadcasting methods. The herbicides applied were Hexazinone, Atrazine, and 2,4-D. **Figures 8 and 9** present close-up images of the near-stream riparian buffer along the lower reaches of the herbicide application zone.

Figure 10 illustrates the proposed aerial broadcast application zone of herbicides associated with notification number 2011-781-00151. Streams and rivers within this zone drain directly into a small fish-bearing tributary of the Alsea River.

Figure 1. Example Aerial Herbicide Spray Zone – Notification Number 2009-781-50075

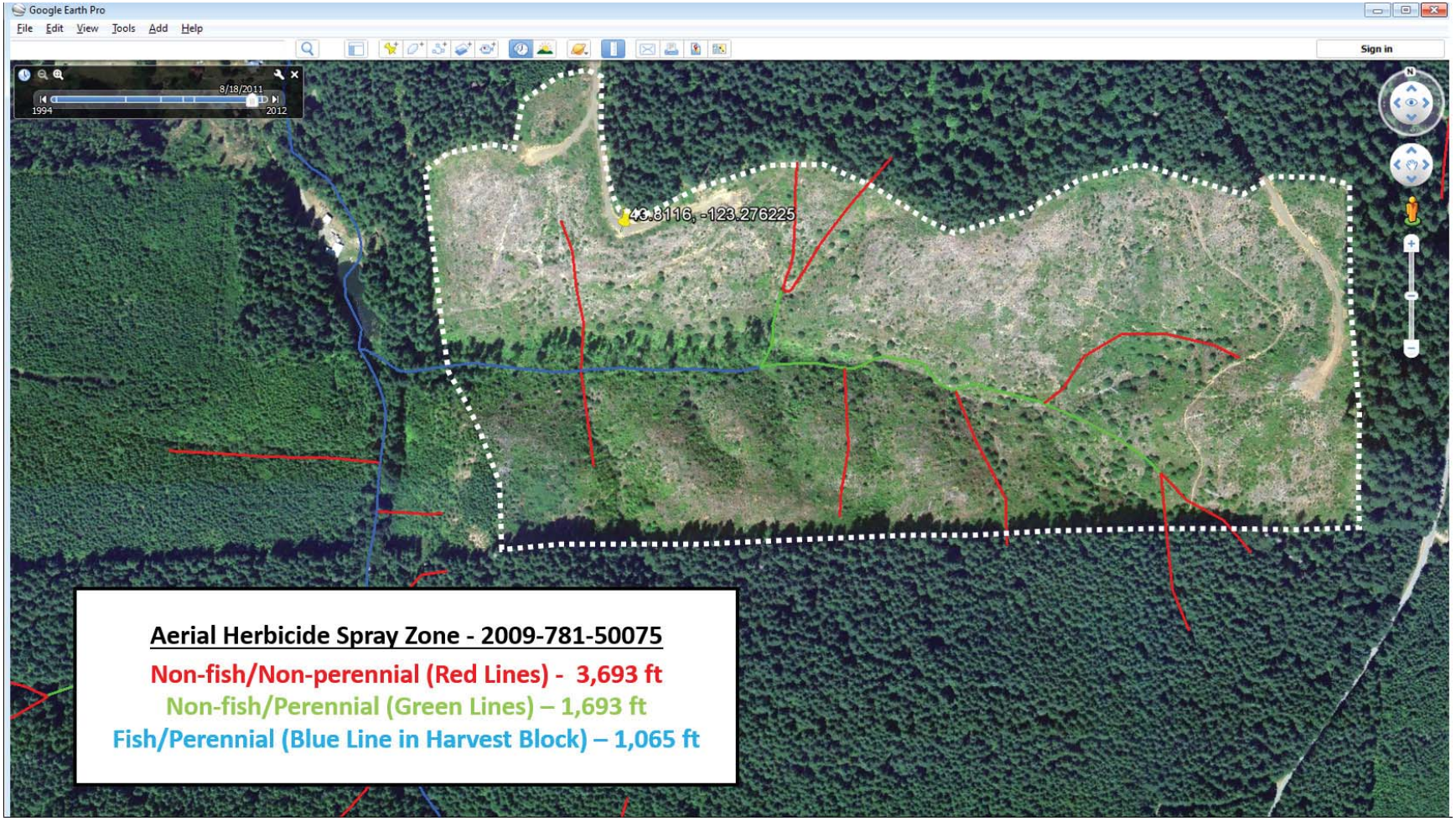

Figure 2. Post-Harvest riparian buffers along small fish bearing streams within this application zone – Notification Number 2009-781-50075

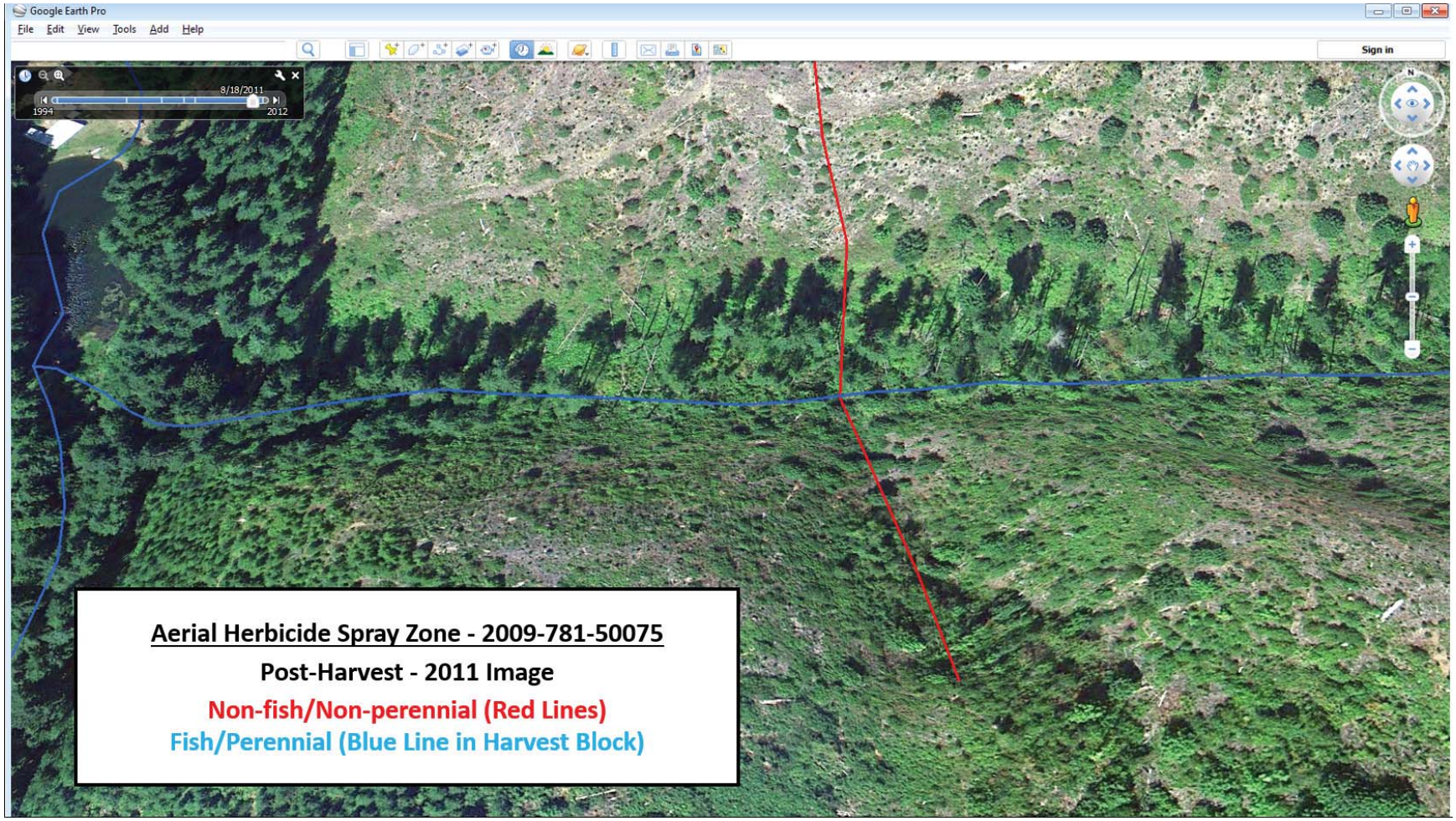

Figure 3. Pre-Harvest riparian buffers along small fish bearing streams within this application zone – Notification Number 2009-781-50075

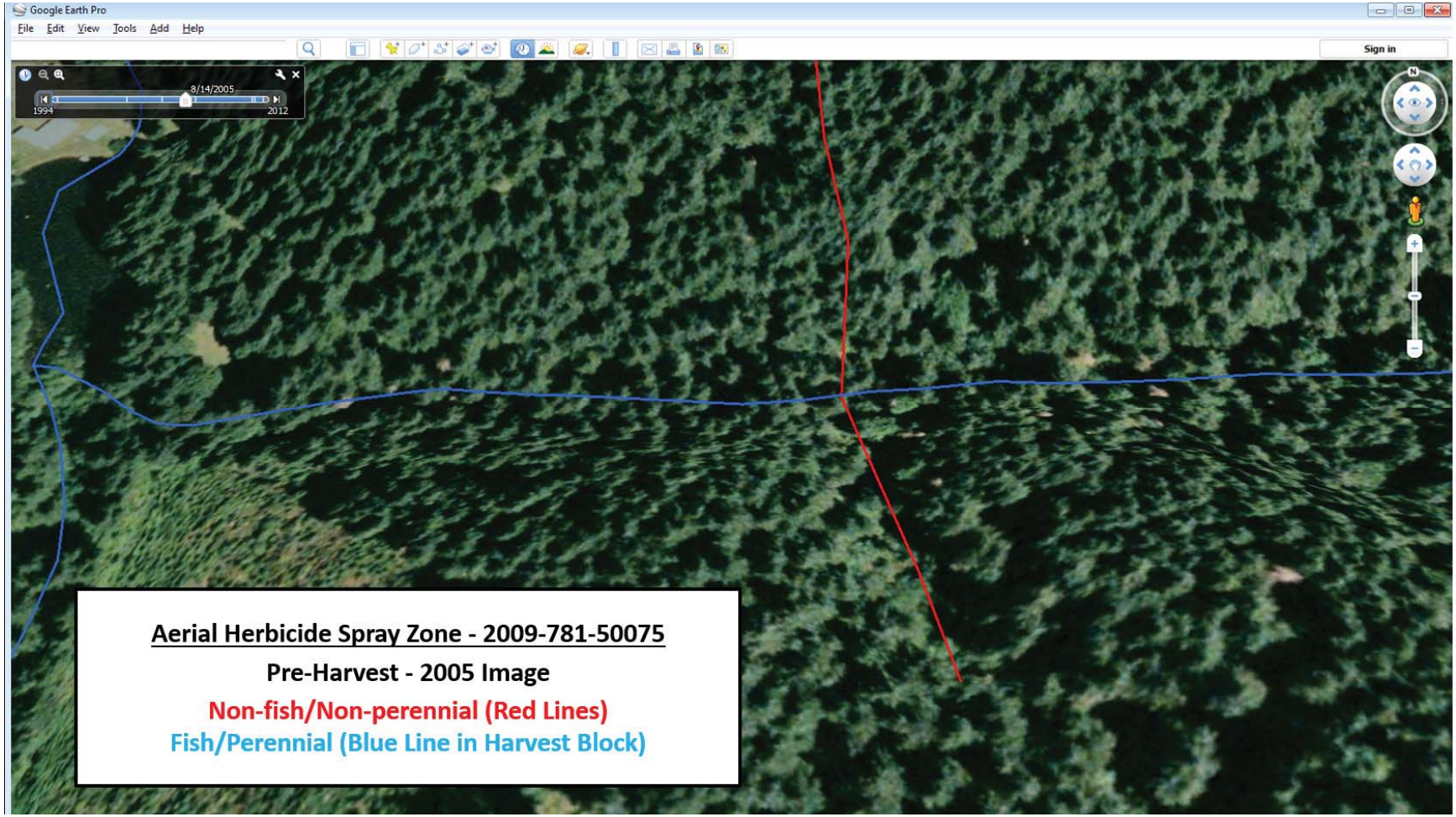

Figure 4. Example Aerial Herbicide Spray Zone – Notification Number 2011-781-00151 (Unit#8)

Figure 5. Post-Harvest riparian buffers within this application zone – Notification Number 2011-781-00151 (Unit #8)

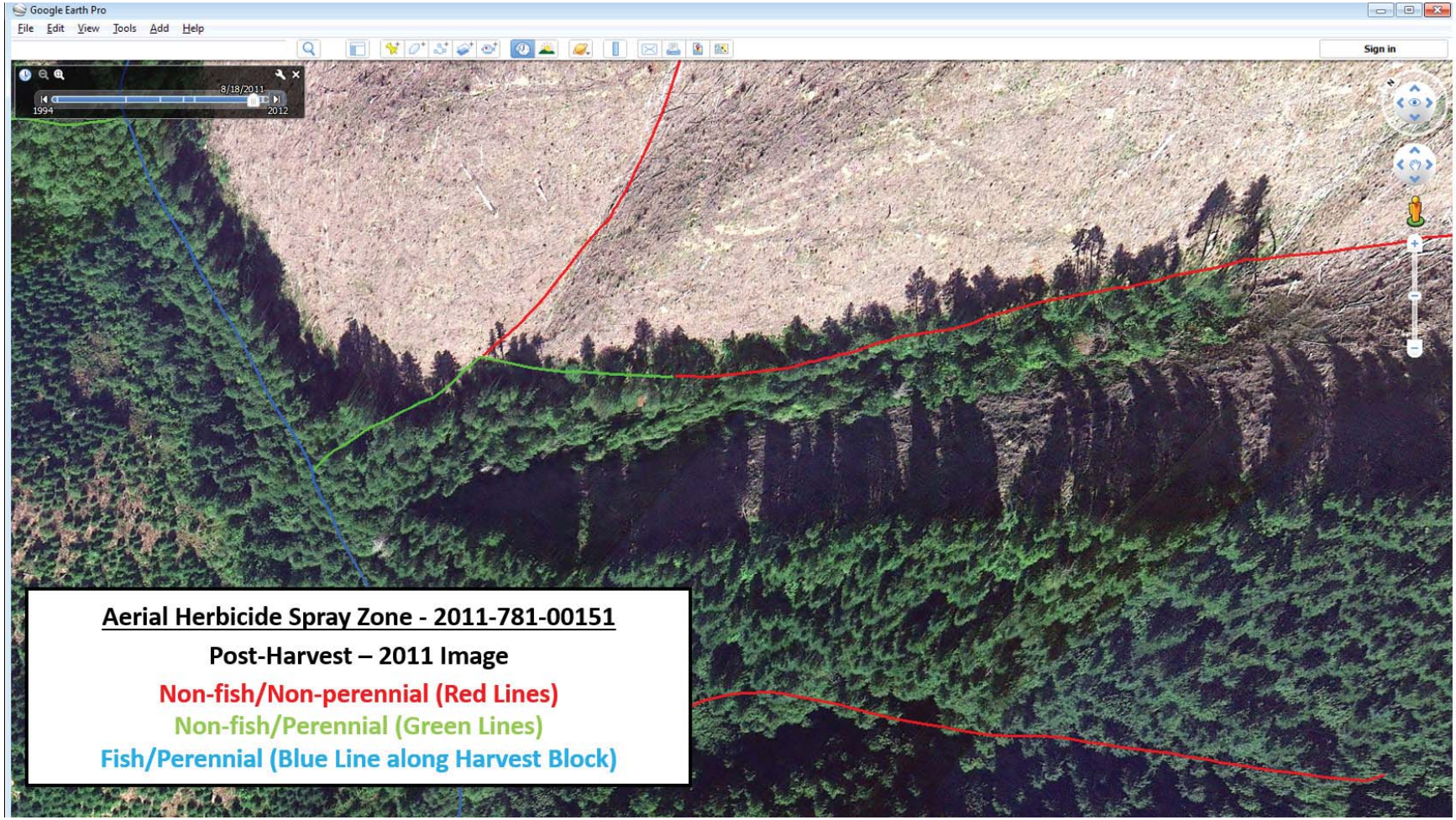

Figure 6. Pre-Harvest riparian buffers within this application zone – Notification Number 2011-781-00151 (Unit #8)

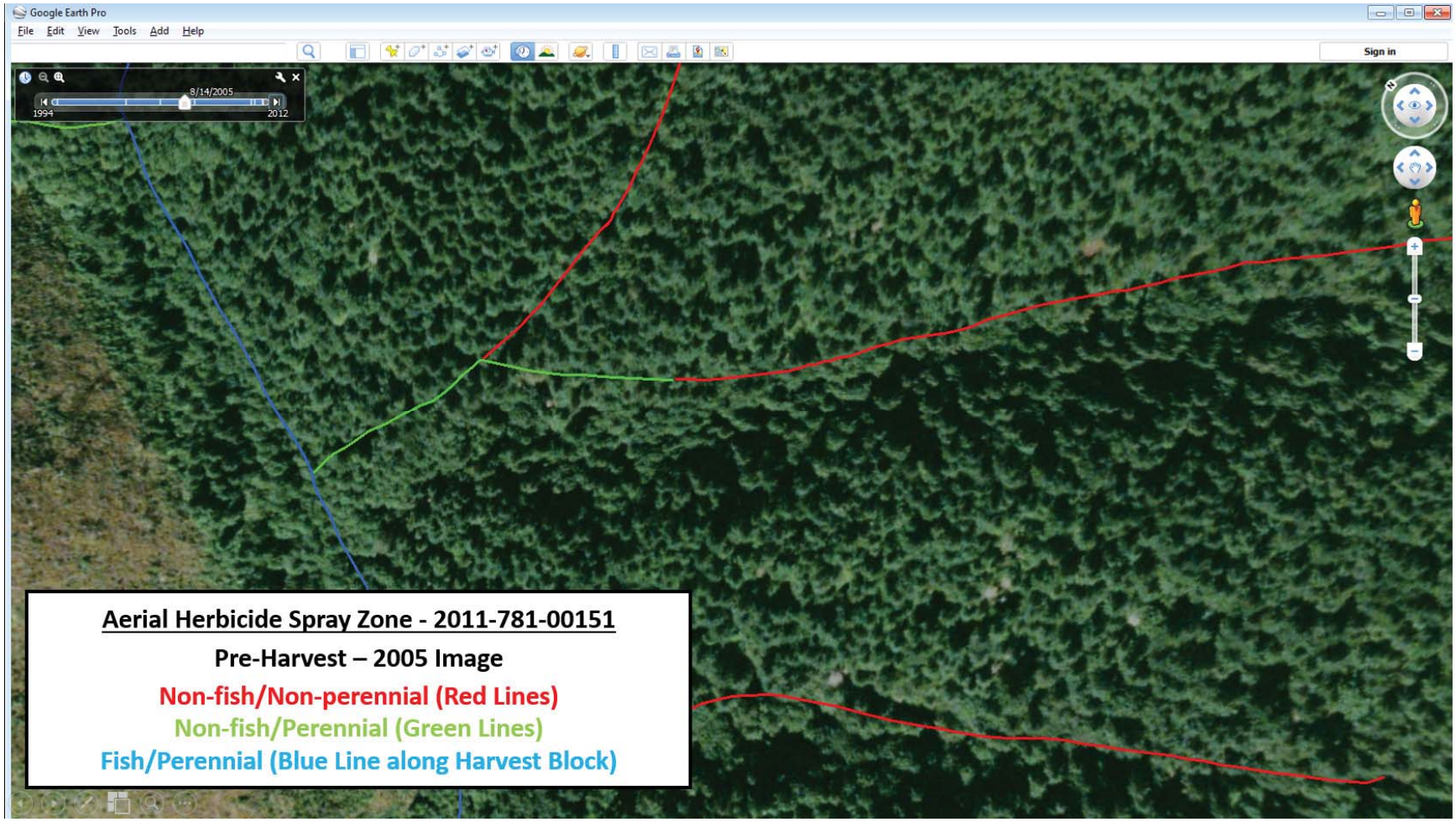

Figure 7. Example Aerial Herbicide Spray Zone – Notification Number 2011-781-00151 (Unit#7)

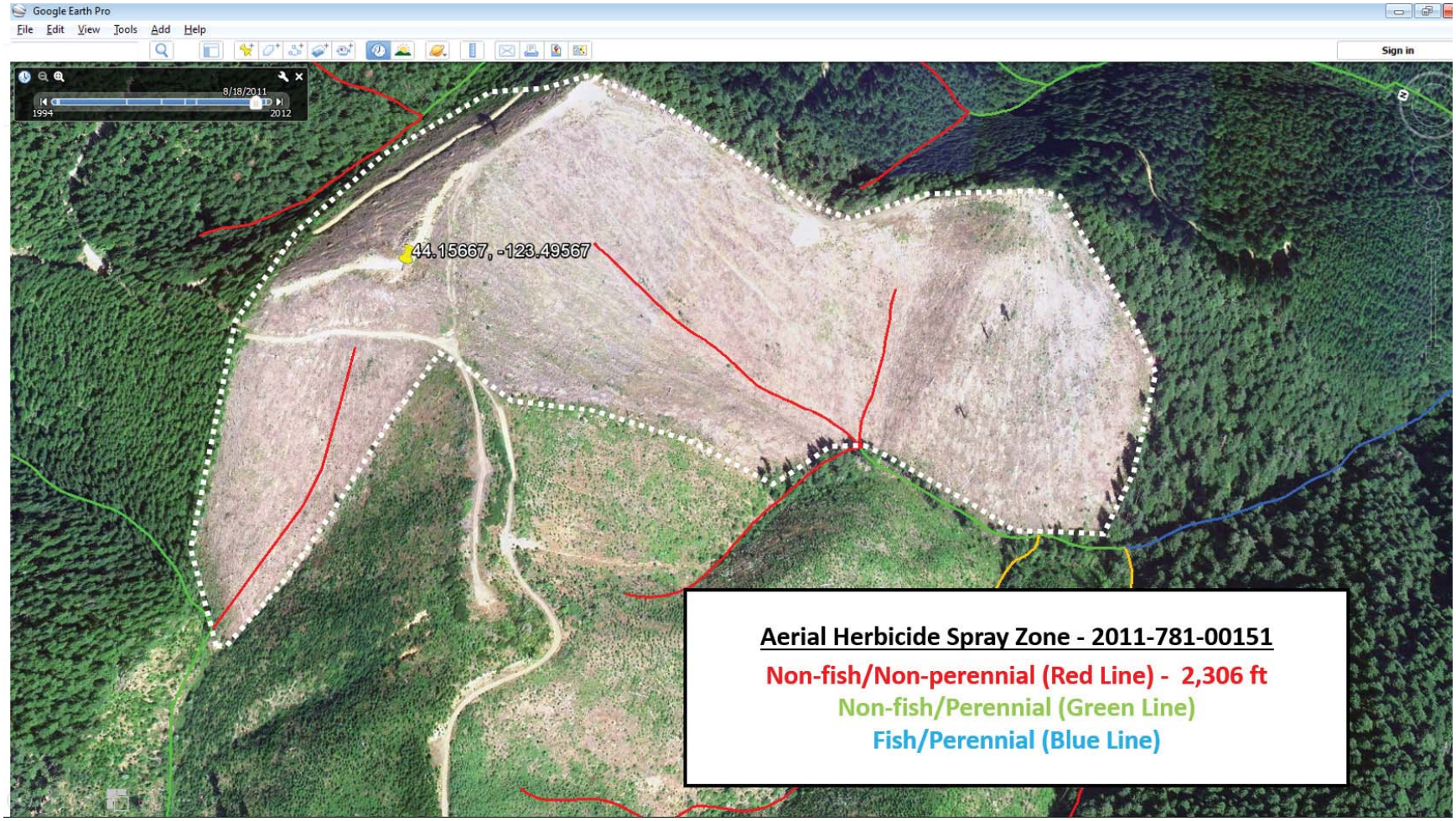

Figure 8. Post-Harvest riparian buffers within this application zone – Notification Number 2011-781-00151 (Unit #7)

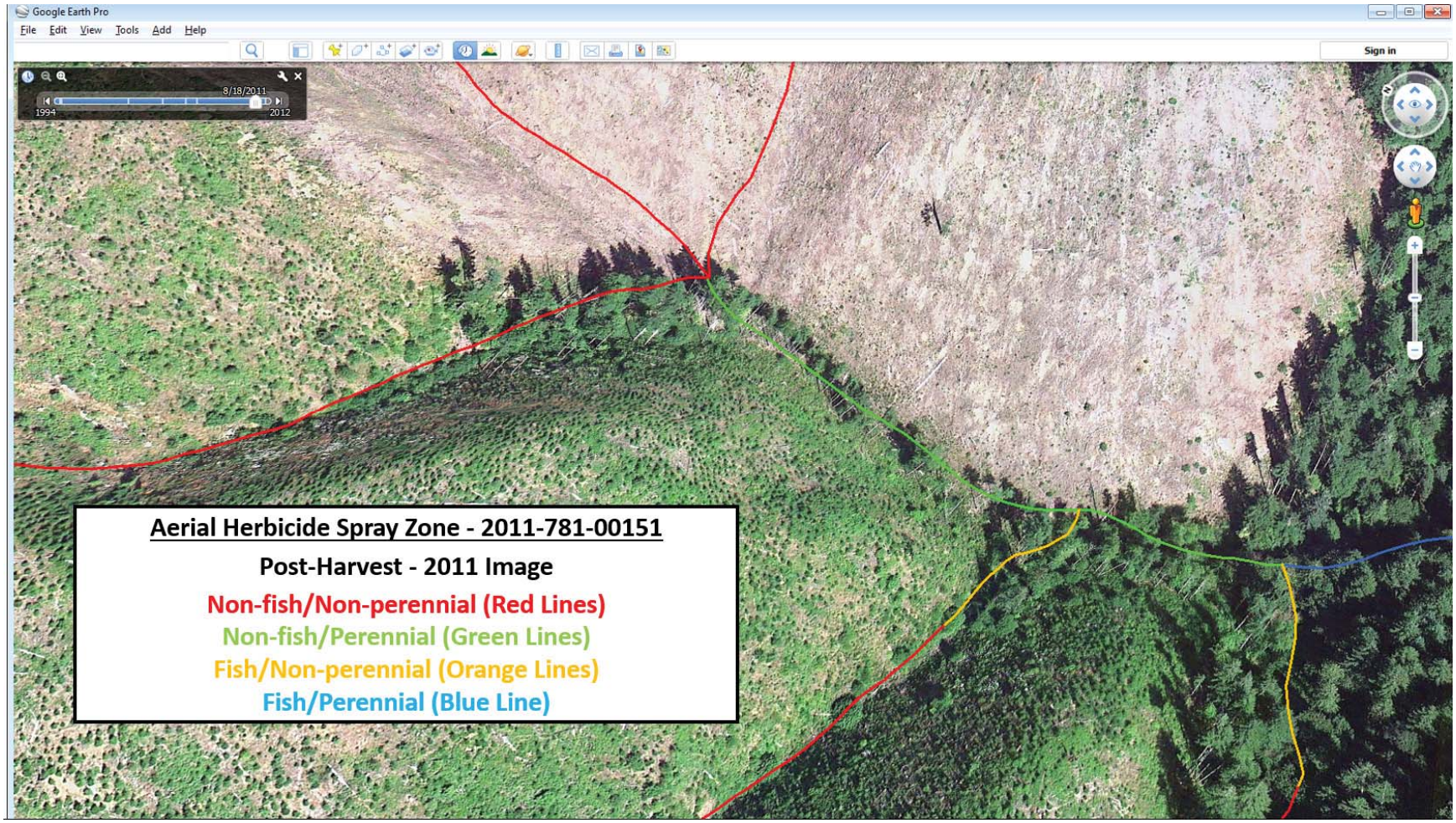

Figure 9. Pre-Harvest riparian buffers within this application zone – Notification Number 2011-781-00151 (Unit #7)

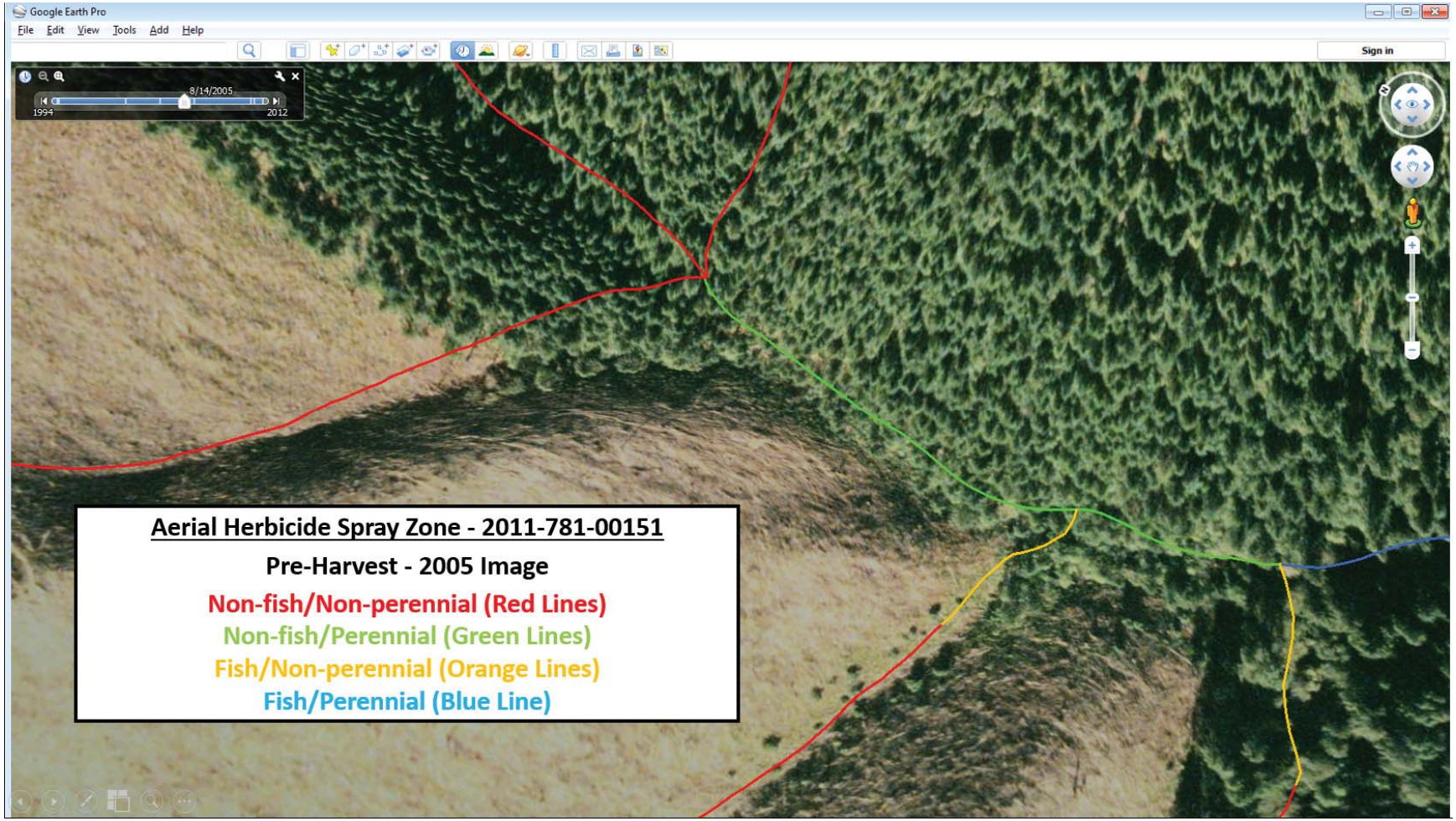

Figure 10. Example Aerial Herbicide Spray Zone – Notification Number 2014-781-00194